We claim:

1. A method for enhancing hair growth in a subject, comprising exposing a target area of skin of a subject to a polypeptide comprising an actin-binding peptide, other than a full length SEQ ID NO: 1.

2. The method of claim 1, wherein the polypeptide comprises a fragment of a β-thymosin, or a variant of the fragment that enhances hair growth in the subject.

3. The method of claim 2, wherein the variant of the fragment that enhances hair growth in the subject contains one or more amino acid deletions or substitutions outside of the actin-binding motif.

4. The method of claim 2, wherein the variant is at least 70% identical to SEQ ID NO: 1.

5. The method of claim 2, wherein the fragment of the β-thymosin is a fragment of thymosin β_4, is no more than 40 amino acid residues in length, and comprises amino acid residues 17-22 of SEQ ID NO: 1, wherein the fragment of thymosin β_4 includes 0 to 5 conservative amino acid substitutions.

6. The method of claim 5, wherein the fragment of thymosin β_4 is no more than 40 amino acid residues in length, and comprises amino acid residues 17-23 of SEQ ID NO: 1, wherein the fragment of thymosin β_4 includes 0 to 5 conservative amino acid substitutions.

7. The method of claim 5 or 6, wherein the fragment of thymosin β_4 is no more than 20 amino acid residues in length, wherein the fragment of thymosin β_4 includes 0 to 4 conservative amino acid substitutions.

8. The method of claim 5 or 6, wherein the fragment of thymosin β_4 is no more than 10 amino acid residues in length, wherein the fragment includes 0 to 3 conservative amino acid substitutions.

9. The method of claim 5 or 6, wherein the fragment of thymosin β_4 is no more than 7 amino acid residues in length, wherein the fragment includes 0 to 2 conservative amino acid substitutions.

10. The method of claim 9, wherein the fragment of thymosin β_4 comprises amino acid residues 17-22 of SEQ ID NO: 1.

11. The method of claim 2, wherein the polypeptide consists of the fragment of thymosin β_4, or a variant of the fragment, that enhances hair growth in the subject.

12. The method of claim 9, wherein the polypeptide consists of amino acid residues 17-23 of SEQ ID NO: 1.

13. The method of claim 9, wherein the polypeptide consists of amino acid residues 17-22 of SEQ ID NO: 1.

14. The method of claim 1, wherein the polypeptide is applied topically to an area of alopecia affected skin.

15. The method of claim 14, wherein the area of alopecia affected skin is a scalp of the subject.

16. The method of claim 1, wherein the actin-binding peptide is selected from the group consisting of a fragment of a β-thymosin, a fragment of thymosin β_4, a peptide comprising T-3 but not a full length thymosin β_4, an actin-binding domain of thymosin β_4 that is no more than 7 amino acid residues in length, an actin-binding domain of thymosin β_4 that is no more than 6 amino acid residues in length, a therapeutically effective homolog or variant of any of the foregoing, and mixtures of two or more thereof.

17. The method of claim 1, wherein the subject is a human.

18. The method of claim 1, wherein the subject is a non-human animal.

19. A composition for promoting hair growth, wherein the composition comprises:

a polypeptide comprising an actin-binding peptide, other than a full length SEQ ID NO: 1.

20. The composition of claim 19, further comprising a pharmaceutically suitable carrier.

21. The composition of claim 20, wherein the pharmaceutically suitable carrier is a topical pharmaceutical preparation.

22. The composition of claim 20, wherein the pharmaceutically suitable carrier comprises a hydrogel.

23. The composition of claim 19, wherein the polypeptide comprises a fragment of thymosin β_4, or a variant of the fragment that enhances hair growth in the subject.

24. The composition of claim 23, wherein the variant is at least 70% identical to SEQ ID NO: 1.

25. The composition of claim 23, wherein the fragment of thymosin β_4 is no more than 40 amino acid residues in length, and comprises amino acid residues 17-23 or 17-22 of SEQ ID NO: 1, wherein the fragment includes 0 to 5 conservative amino acid substitutions.

26. The composition of claim 25, wherein the fragment of thymosin β_4 is no more than 20 amino acid residues in length, wherein the fragment includes 0 to 4 conservative amino acid substitutions.

27. The composition of claim 25, wherein the fragment of thymosin β_4 is no more than 10 amino acid residues in length, wherein the fragment includes 0 to 3 conservative amino acid substitutions.

28. The composition of claim 25, wherein the fragment of thymosin β_4 is no more than 7 amino acid residues in length, wherein the fragment includes 0 to 2 conservative amino acid substitutions.

29. The composition of claim 25, wherein the fragment of thymosin β_4 is no more than 6 amino acid residues in length, wherein the fragment includes 0 to 2 conservative amino acid substitutions.

30. The composition of claim 25, wherein the fragment of thymosin β_4 consists of amino acid residues 17-23 of SEQ ID NO: 1.

31. The composition of claim 25, wherein the fragment of thymosin β_4 consists of amino acid residues 17-22 of SEQ ID NO: 1.

32. The composition of claim 25, wherein the polypeptide consists of the fragment of thymosin β_4, or a variant of the fragment, that enhances hair growth in the subject.